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10/075,651	02/14/2002	Jeremy Alan Arnold	ROC920010318US1	9372

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MARTIN & ASSOCIATES, LLC
IBM INTELLECTUAL PROPERTY LAW DEPARTMENT
DEPARTMENT 917, BUILDING 006-1
3605 HIGHWAY 52 NORTH
ROCHESTER, MN 55901-7829

EXAMINER	
WU, YICUN	

ART UNIT	PAPER NUMBER
2165	

DATE MAILED: 03/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/075,651	ARNOLD ET AL.	
	Examiner	Art Unit	
	Yicun Wu	2165	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ____ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10-4-2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-45* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1-11, 20-45* is/are allowed.

6)☒ Claim(s) *12,14-16,18 and 19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

III. DETAILED ACTION

1. Claims 1-45 are presented for examination.

2. Applicant's arguments submitted on 10-4-2004 with respect to claims 12, 14-16 and 18-19 have been reconsidered but are not deemed persuasive for the reasons set forth below.

Response to Applicant' Remarks

3. Examiner has completed a through study of Applicant's amendment of October 4, 2004.

4. Especially, Applicant's amendments to claims 12, 14-16 and 18-19 and remarks at pages 2-4 of the Amendment of 10-4-2004 has been carefully studied and reviewed.

5. Applicant's amendments to claims 12, 14-16 and 18-19 further direct the claimed invention into.

6. Examiner has carefully and thoroughly studied and reviewed Applicant's amendment of 10-4-2004. Examiner asserts that Maimone in combination with Chaudhuri et al.

teaches Applicant's claimed invention of a method for optimizing a database.

In addition, the specially discussed feature of the claimed invention ("a plurality of applications that access the database ") is very clearly discussed in Maimone (col. 4, lines 28-67). And ("data type") is very clearly discussed in Maimone (col. (i.e. the relational database is dynamically reconfigured using commands of a data definition language of the relational database so that the schema supports the storage (col. 2, lines 34-48).

7. Applicant is inaccurate for the reasons explicitly stated in the first Office Action. Examiner asserts that Maimone in combination with Chaudhuri et al. teaches Applicant's claimed invention of a method for optimizing a database.

8. These reasons have been explicitly stated in the first Office Action. Please see the next section.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 12, 14-16 and 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maimone (U.S. Patent No. 6,418,451) in view of Chaudhuri et al. (U.S. Patent No. 6,529,901).

As to Claim 12, Maimone discloses a method for optimizing a database comprising the steps of:

(I) determining a preferred data type for at least one of a plurality of applications that access the database (col. 4, lines 28-67); and

(2) dynamically changing a schema for the database to provide the preferred data type when at least one of the plurality of applications requests access to data in the database (i.e. the relational database is dynamically reconfigured using commands of a data definition language of the relational database so that the schema supports the storage (col. 2, lines 34-48).

Maimone does not teach optimizing a database.

Chaudhuri et al. teaches optimizing a database (i.e. query optimization) (col. 2, lines 3-67).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to have modified Maimone wherein the optimizing is optimizing a database.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have modified Maimone by the teaching of Chaudhuri et al. because providing optimizing a database allows optimized query plans as taught by Chaudhuri et al. (col. 1, lines 42-50).

As to Claim 14, Maimone as modified teaches a method further comprising

determining when one of the plurality of applications accesses the database that has a different preferred data type than the data type specified in the database schema (Maimone col. 2, lines 34-48 and Fig. 2); and

converting the data retrieved from the database to the different preferred data type (Maimone col. 2, lines 34-48 and Fig. 2).

As to Claim 15, Maimone as modified teaches a method wherein step of dynamically changing the schema for the database comprises the step of changing the data type of at least one column in the database (Maimone col. 2, lines 34-48 and Fig. 2).

As to Claim 16, Maimone as modified teaches a method wherein the step of dynamically changing the schema for the database comprises the step of adding a new column of a second data type to the database that contains the same data in an existing column of a first data type in the database (Maimone col. 2, lines 34-48 and Fig. 2-5).

As to Claim 18, Maimone as modified teaches a method further comprising the step of specifying a preferred data type for at least one of a plurality of applications that access the database (Maimone col. 2, lines 34-48 and Fig. 2-5).

As to Claim 19, Maimone as modified teaches a method further comprising

gathering the statistics (Maimone col. 2, lines 34-48 and Fig. 2-5).

Allowable subject Matter

11. Claims 1-11, 20-45 are allowed over the prior art made of record.

12. Claims 13 and 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

13. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record (Maimone (U.S. Patent No. 6,418,451)) does not disclose, teach or suggest the claimed limitations of (in combination with all other features in the claims):

the database optimizer using statistics regarding the type of applications accessing data in a database, the frequency with which the applications access the data, and the location of the data being accessed by the applications to make at least one change to the database schema to

optimize the performance of accessing data in the database as claimed in claim 1.

The prior art of record (Maimone (U.S. Patent No. 6,418,451)) does not disclose, teach or suggest the claimed limitations of (in combination with all other features in the claims):

a data coherency mechanism that maintains coherency of reflective columns in the database that are created by the data access mechanism and that contain the same data. in different data types; and

a data type conversion mechanism that converts data in a first data type retrieved from the database to a second data type that is preferred by a requesting application, as claimed in claim 10.

The prior art of record (Maimone (U.S. Patent No. 6,418,451)) does not disclose, teach or suggest the claimed limitations of (in combination with all other features in the claims):

if the statistics indicate that a selected type of application has a number of accesses to a selected column of a first data type in the database that exceeds a first

threshold level, the data optimizer determines whether the statistics indicate that the selected type of application has a number of accesses to the selected column that exceeds a second threshold level, and if not, the data optimizer adds a new column of a second data type to the database that contains the same data in the selected column, the selected column and the new column being defined as reflective columns because they contain the same data in different data types;

wherein the data optimizer detects when one of the plurality of applications requests access to data in the selected column, determines the preferred data type for the requesting application, determines if the data in the selected column is of the preferred data type for the requesting application, and if the data in the selected column is of the preferred data type for the requesting application, returning the data in the selected column to the requesting application, as claimed in claim 11.

The prior art of record (Maimone (U.S. Patent No. 6,418,451)) does not disclose, teach or suggest the claimed limitations of (in combination with all other features in the claims):

(5) if the data is stored in the database in the preferred data type for the requesting application, returning the data to the requesting application;

(6) if the data is not stored in the database in the preferred data type for the requesting application, performing the steps of:

(6A) converting the data to the preferred data type for the requesting application; and

(6B) returning the converted data to the requesting application;

(7) reading statistics regarding the type of applications accessing data in the database, the frequency with which the applications access the data, and the location of the data being accessed by the applications; and

(8) dynamically changing a schema for the database to provide the preferred data type when at least one of the plurality of applications requests access to data in the database, as claimed in claim 20.

The prior art of record (Maimone (U.S. Patent No. 6,418,451)) does not disclose, teach or suggest the claimed

limitations of (in combination with all other features in the claims):

if the statistics indicate that the selected type of application has a number of accesses to the selected column that does not exceed a second threshold level, adding a new column of a second data type to the database that contains the same data in the selected column, the selected column and the new column being defined as reflective columns because they contain the same data in different data types, as claimed in claim 24.

The prior art of record (Maimone (U.S. Patent No. 6,418,451)) does not disclose, teach or suggest the claimed limitations of (in combination with all other features in the claims):

a database optimizer that uses statistics regarding the type of applications accessing data in a database, the frequency with which the applications access the data, and the location of the data being accessed by the applications to make at least one change to the database schema to optimize the performance of accessing data in the database, as claimed in claim 29.

The prior art of record (Maimone (U.S. Patent No. 6,418,451)) does not disclose, teach or suggest the claimed limitations of (in combination with all other features in the claims):

a data coherency mechanism that maintains coherency of reflective columns in the database that are created by the data access mechanism and that contain the same data in different data types; and a data type conversion mechanism that converts data in a first data type retrieved from the database to a second data type that is preferred by the requesting application; and computer-readable signal bearing media bearing the database optimizer, as claimed in claim 40.

The prior art of record (Maimone (U.S. Patent No. 6,418,451)) does not disclose, teach or suggest the claimed limitations of (in combination with all other features in the claims):

if the statistics indicate that a selected type of application has a number of accesses to a selected column of a first data type in the database that exceeds a first threshold level, the data optimizer determines whether the statistics indicate that the selected type of application

has a number of accesses to the selected column that exceeds a second threshold level, and if not, the data optimizer adds a new column of a second data type to the database that contains the same data in the selected column, the selected column and the new column being defined as reflective columns because they contain the same data in different data types;

wherein the data optimizer detects when one of the plurality of applications requests access to data in the selected column, determines the preferred data type for the requesting application, determines if the data in the selected column is of the preferred data type for the requesting application, and if the data in the selected column is of the preferred data type for the requesting application, returning the data in the selected column to the requesting application; if the data in any column reflective of the selected column is of the preferred data type for the requesting application, the database optimizer returns the data from the reflective column to the requesting application, as claimed in claim 43.

The prior art of record (Maimone (U.S. Patent No. 6,418,451)) does not disclose, teach or suggest the claimed

limitations of (in combination with all other features in the claims):

the type of the plurality of applications accessing data in the database; the frequency with which the plurality of applications access the data, as claimed in claim 13.

The prior art of record (Maimone (U.S. Patent No. 6,418,451)) does not disclose, teach or suggest the claimed limitations of (in combination with all other features in the claims):

maintaining data coherency between the existing column and the new column as claimed in claim 17.

14. **THIS ACTION IS MADE FINAL**, Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory- period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136 (a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply-expire later than SIX MONTHS from the mailing date of this final action.

Conclusion

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yicun Wu whose telephone number is 703-305-4889. The examiner can normally be reached on 8:00 am to 4:30 pm, Monday -Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dov Popovici can be reached on 703-305-3830. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9306 for regular communications and 703-746-7240 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

C. Rones

CHARLES RONES
PRIMARY EXAMINER

Yicun Wu
Patent Examiner
Technology Center 2100

March 8, 2005